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Poisson structures on Weil bundles

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Abstract

In the present paper, we construct complete lifts of covariant and contravariant tensor fields from the smooth manifold M to its Weil bundle T AM for the case of a Frobenius Weil algebra A. For a Poisson manifold (M, w) we show that the complete lift w C of a Poisson tensor w is again a Poisson tensor on T AM and that w C is a linear combination of some "basic" Poisson structures on T AM induced by w. Finally, we introduce the notion of a weakly symmetric Frobenius Weil algebra A and we compute the modular class of (T AM, w C) for such algebras.

Keywords

Modular class, Poisson structure, Weil algebra, Weil functor